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GEOGRAPHICAL NOTES.

THE INTERNATIONAL GEOGRAPHICAL CONGRESS AT BERNE, IN 1891.—This Congress will be held in the week of the 10-15 August, 1891, during the celebration of the Seventh Centenary of the city of Berne.

The general programme embraces five divisions :

1. TECHNICAL GEOGRAPHY, including Mathematical Geography, Geodesy, Topography and Cartography, Instruments, Projection, The Universal Hour, A Prime Meridian, Orthography of Geographical Names, etc.
2. PHYSICAL GEOGRAPHY.—Configuration of the Land, Hypsometry, Hydrography, Maritime Geography, Variations of Climate, Terrestrial Magnetism, Botanical, Zoological and Geological Geography, Volcanoes, Earthquakes, Ethnography, Anthropology, etc.
3. COMMERCIAL GEOGRAPHY.—Population, Emigration, Agriculture, Means of Communication, Commerce, Industry, Production, Commercial Museums, Geographical Statistics.
4. EXPLORATIONS AND VOYAGES.—Travels, Expeditions, Explorations, Colonization, Religious Missions.
5. GEOGRAPHICAL INSTRUCTION AND THE DIFFUSION OF GEOGRAPHY.—Methods of Teaching, Models and Instruments, Wall Maps, Atlases, etc., Globes,

Primary, Secondary and Higher Instruction, Geographical Societies and Publications, Bibliography.

A fully detailed programme will be issued in March, 1891, with a list of communications to be made to the Congress.

THE UNIT MEASURE OF TIME.—Dr. Sanford Fleming, President of Section III. of the Royal Society of Canada, called attention at the opening meeting of the section to the necessity of a unification of time reckoning. There is, in fact, only one time; and, this somewhat revolutionary assertion once established, the way is made clear for a system of time reckoning for the whole globe.

Dr. Fleming referred to the recommendation made by the Washington Conference, in 1884, that time be computed according to the solar passage on a recognized zero meridian of the earth's surface. The unit measure may be defined as the interval of duration extending from one mean solar passage on the anti-meridian of Greenwich (selected by the Conference) to the next succeeding passage. This standard unit has been variously called A Universal Day, A Terrestrial Day, A Non-Local Day, A Cosmopolitan Day, A World Day, and a Cosmic Day; all inappropriate names, since the time unit, though identified by the Washington Conference with the civil day of Greenwich, is equally related to all points on the earth's surface, in every latitude and longitude. For this time-unit a name is wanted.

Dr. Fleming suggested that a special committee be appointed to consider the subject. The suggestion

was adopted, and the committee made a report recommending that correspondence be opened, in the name of the Royal Society of Canada, with sister societies in other parts of the world with the view of bringing the subject to their notice, and asking the favor of an expression of opinion regarding it. The desired name is to be sought, by preference, in the classical languages.

The report of the committee was approved by the Royal Society of Canada at the general meeting held May 29, 1890.

It does not appear how the right name is to be chosen, at last; and, before this point can be settled, the term Universal Hour may have established itself in the minds of men.

RECENT CHARTS OF THE U. S. HYDROGRAPHIC OFFICE.

- No. 1200.—Pennsylvania : Lake Erie, Erie Harbor.
No. 1205.—East India Archipelago : Singapore and Rhio Straits.
No. 1206.—Singapore New Harbor.
No. 1207.—Dominion of Canada : Quebec Harbor.
No. 1208.—Portugal : Approaches to the River Tagus and the Harbor of Lisbon.
No. 1215.—Flores Island, Rio de la Plata.
No. 1216.—Hawaiian Islands, with Islands and Reefs to the Westward.
No. 1217.—Gulf of St. Lawrence : Caraquette, Shipagan and Miscou Harbors, Bay of Chaleurs.
No. 1218.—Coasts of Peru and Chili : Pisco to Arica.
No. 1219.—Coast of Chili : Arica to Caldera.

- No. 1220.—Coast of Chili : Caldera to Valparaiso.
No. 1221.—Samoan Islands : Upolu, Safatu Harbor.
No. 1222.—Coasts of the Argentine Republic : Bahia Blanca to Rio Negro.
No. 1223.—Gulf of California : Pichilique Harbor (La Paz Bay).
No. 1224.—Azores : Fayal Channel, with Horta and Pim Bays.
No. 1225.—Gulf of Mexico : Laguna de Terminos, Western Entrance.
No. 1226.—Bahamas : Wide Opening (Exuma Sound).
No. 1227.—Bahamas : The Fleeming, or Six Shilling Channel (N. E. Providence Channel) and Ship Channel (Exuma Sound).
No. 1228.—Gulf of Mexico : Laguna de Terminos, Puerto Real Entrance.
No. 1229.—North America : Gulf of California, La Paz Harbor.
No. 1230.—Philippines : Luzon Island, Manila Bay.
No. 1231.—Island of Santo Domingo : Republic of Haïti, Cape Haïti Harbor.
No. 1232.—Chili : Concon Cove.
No. 1233.—Gulf of Mexico : Cay Arenas.
No. 1234.—Gulf of Mexico : Arcas Cays, Campeche Bank.
No. 1235.—Gulf of Mexico : Sisal Anchorage and Reefs.
No. 1236.—Dominion of Canada : The Gut of Canso, with its Southern Approaches, and Chedabucto Bay.
No. 1237.—Dominion of Canada, Cape Breton Island : Great and Little Bras d'Or Lakes, with their Approaches.

No. 1238.—South America, Guiana : Maroni and Mana Rivers.

BOUNDARY LINE BETWEEN NEW YORK AND NEW JERSEY IN LANDS UNDER WATER.—The Commissioners* appointed by the States of New Jersey and New York, to establish the boundary line between the two States in the lands under water in Raritan Bay, Hudson River, Bay of New York, Kill von Kull and Arthur Kill, or Staten Island Sound, finished their task at the end of the year 1889, and the results arrived at are presented in two Reports, issued in 1887 and 1890 by the New Jersey Boundary Commission.

The agreement, finally adopted on the 12th of October, 1887, as to the lands under water in Raritan Bay, establishes the boundary line as follows :

First. From the "Great Beds light-house," in Raritan bay, north (twenty) 20 degrees sixteen minutes west, true, to a point in the middle of the waters of Arthur Kill or Staten Island Sound, equidistant between the south-westerly corner of the dwelling-house of David C. Butler, at Ward's Point, on Staten Island, in the State of New York, and the southeasterly corner of the brick building on the lands of Cortlandt L. Parker, at the intersection of the westerly line of Water Street with the northerly line of Lewis Street, in Perth Amboy, in the State of New Jersey.

Second. From "Great Beds light-house" south sixty-four degrees and twenty-one minutes east, true (S. 64°

*The Commissioners for New Jersey were : Robert C. Bacot, A. B. Stoney, and George H. Cook, who died Sept. 22, 1889. His place was filled by Col. Edwin A. Stevens. The New York Commissioners were : Mayo W. Hazeltine, Robert Moore and Lieut. G. C. Hanus, U. S. N.

21' E.), in line with the centre of Waackaack or Wilson's beacon, in Monmouth County, New Jersey, to a point at the intersection of said line with a line connecting "Morgan No. 2" Triangulation Point, U. S. Coast and Geodetic Survey, in Middlesex County, New Jersey, with the "Granite and Iron beacon," marked on the accompanying maps as "Romer stone beacon," situated on the "Dry Romer shoal"; and thence on a line bearing north, seventy-seven degrees and nine minutes east, true, (N. $77^{\circ} 9' E.$), connecting "Morgan No. 2" Triangulation Point, U. S. Coast and Geodetic Survey in Middlesex County, New Jersey, with said "Romer stone beacon" (the line passing through said beacon and continuing in the same direction) to a point at its intersection with a line drawn between the "Hook beacon," on Sandy Hook, New Jersey, and the Triangulation Point of the U. S. Geodetic Survey known as the Oriental Hotel, on Coney Island, New York; then southeasterly, at right angles with the last-mentioned line, to the main sea.

A second agreement, made on the 23d of December, 1889, settles the boundary line in lands under water in the Arthur Kill, Kill von Kull, New York Bay and the Hudson River, as follows:

Starting from a point (at the conclusion of the boundary line in Raritan Bay), and marked for the purposes of this Agreement, A.

This point is equi-distant between the southwesterly corner of the dwelling-house of David C. Butler, at Ward's Point, on Staten Island, in the State of New York, and the southeasterly corner of the brick building on the lands of Cortlandt L. Parker at the inter-

section of the westerly line of Water Street with the northerly line of Lewis Street, in Perth Amboy, in the State of New Jersey.

The line runs thence in a succession of straight lines through the Arthur Kill, the Kill von Kull, New York Bay and the Hudson River to a point marked "J J," for the purposes of this Agreement.

This point "J J" is at the extreme northern limit of the boundary line in lands under water, and from this point the line runs westerly to a rock which is described in the Report of the New York and New Jersey Boundary Commission of 1883 as marking the eastern end of the boundary line between New York and New Jersey as determined upon by the Royal Boundary Commission of 1769.

The absolute geographical locations of the point at the place of beginning and the point of conclusion are as follows :

Point A (place of beginning).

(Latitude and Longitude not given. Description sufficient.)

Point JJ (place of conclusion).

Latitude.	Seconds in Metres.	Longitude.	Seconds in Metres.
40° 59' 49".74 N.	1534.38.	74° 53' 38".57 W.	901.46

The labors of the Commissions have put an end to disputes, constantly renewed during two centuries.

GEOGRAPHICAL EXHIBITION.—The Department of Geography of the Brooklyn Institute opened in November a Permanent Exhibition of specimens of Text Books,

Maps, Globes, and other apparatus relating to geographical science and instruction.

The Exhibition, which is free to the public, is under the direction of Mr. Cyrus C. Adams, President of the Department of Geography in the Institute.

Mr. Adams has also taken editorial charge of a monthly magazine, to be published by Goldthwaite Brothers, of New York. The first number will appear in January, 1891.

EXPLORATIONS IN MEXICO.—Under this title, Prof. Angelo Heilprin has brought out in pamphlet form the barometric observations made among the high volcanoes of Mexico, by the expedition under his conduct, and has added a “Consideration of the Culminating Point of the North American Continent.”

Four mountains were ascended—Orizaba, Popocatepetl, Ixtaccihuatl, and the Nevado de Toluca,—and Professor Heilprin says, with regard to his measurements: “The fact that all the summits were ascended within a period of three weeks (April 6-27, 1890), were measured with the same instrument, and during a period of atmospheric equability and stability which is offered to an unusual degree by a tropical dry season, renders the possibility of errors of any magnitude almost nil; at any rate, such errors as may have crept in will probably not affect a general comparative result. The points of important difference are: 1. The highest summit of Mexico is not, as is commonly supposed, Popocatepetl, but the Peak of Orizaba (Citlaltepétl, the “Star Mountain”), which rises 700 feet higher (18,200 feet); 2. Ixtaccihuatl, the familiar “White Woman” of the plain of

Anahuac, is but a few hundred feet (about 550) lower than Popocatepetl."

The data for the determination of the height are given, in the case of each mountain, and there seems to have been nothing left undone to arrive at a correct result; but it must be believed that accuracy in the measurement of a mountain is beyond the reach of science, when it is found that observers equally fitted for the work, and supposed to be equally careful in their methods, can only agree to differ.

Professor Heilprin's altitudes are: Orizaba, 18,205 feet; Popocatepetl, 17,523 feet; Ixtaccihuatl, 16,960 feet; and the Nevado de Toluca, 14,954 feet.

The "Consideration" is devoted to an examination of the claim of Mt. St. Elias to the first place among the high points of North America, and closes with these words: "That the mountain closely approximates the giants of the Mexican plateau is almost certain, but it seems equally probable that its true position is after, and not before, the Peak of Orizaba."

SALTILLO.—The London *Athenæum*, which has taken all knowledge for its province, frequently corrects its victims with incorrection.

In a review of a book, "Face to Face with the Mexicans," in the number for November 1, 1890, occurs this sentence:

"Mrs. Gooch, her husband, and two friends took a house in the city of Saltillo, which she might have said is also known as Leone Vicario."

It was, perhaps, because Mrs. Gooch had paid some attention to Spanish, that she did not think it proper

to bestow upon a Mexican city the Italian name of *Leone*; and her natural good sense must have told her that even the Spanish form, Leon Vicario, was not needed to identify the city of Saltillo.

The *Athenæum* would be wiser, if it did not know so much.

THE NICARAGUA CANAL.—The first number of the *Canal de Nicaragua*, a daily paper begun at Managua, Oct. 1, 1890, gives the following classified list of the persons employed in the operations on the Canal:

Engineering Department.....	7	Officers	
Department of Supplies and Transportation.....	8	"	
Paymaster's Department....	3	"	
<hr/>			
Study of the Bay....	4	Officers,	5 Men
Police	1	"	20 "
Storehouses.....	7	"	153 "
Carpenter Shops.....	1	"	40 "
Breakwater.....	16	"	140 "
Aqueduct.....	6	"	80 "
Diamond Drill.....	4	"	18 "
Transport Service..	3	"	22 "
Location of the Rail Road.....	16	"	40 "
Cultivation.....			20 "
Telegraph.....	8	"	20 "
Crews of the Steamboats.....	8	"	16 "
Rail Road Construction..	31	"	994 "
Medical Department	10	"	30 "
Sick.....	18	"	97 "
Western Division.....	8	"	25 "
<hr/>			
159 Officers, 1720 Men			

The *Canal de Nicaragua* makes the whole number 1849, instead of 1879.

THE WORD "TOBOGGAN."—Prof. W. W. Skeat writes to the *London Academy*, of November 8, 1890,

that he finds in the English-Micmac Dictionary,* compiled by the late Dr. S. T. Rand, the true origin of the word *toboggan*. "The true Micmac form is," he says, "*tobaakun*, accented on *aa*, and meaning a sled or a sledge.

"After much hunting in many books, this is the first time I have ever lighted upon really good authority for this word."

This good authority spells the word *tobākūn*, which ought to be classical Micmac, even for Professor Skeat.

PAPER FOR THE MAPS OF THE ORDNANCE SURVEY.—
The *English Mechanic* publishes the following description of the care exercised in printing the Ordnance maps:

Captain C. E. Haynes, R. E., states that the large-scale maps of the Ordnance Survey are printed on double elephant machine-made drawing paper, the expansion of which, due to humidity, is greatest in its length.

Being a hard paper it is necessary to print from the zinc plate on damp sheets, which contract on drying, in length chiefly; consequently, the form on the plate should have a similar elongation. The negative is taken true to scale, and a photographic transfer prepared, after the Southampton method, on Evans' double elephant thin paper, which likewise has its greatest expansion in length.

Previous to transfer to zinc, the transfer is damped

*The title-page of the book is: "Dictionary of the Language of the Micmac Indians, who reside in Nova Scotia, New Brunswick, Prince Edward Island, Cape Breton and Newfoundland. By Rev. Silas Tertius Rand, D. D., L. L. D. (*Sic*). Halifax, N. S.: Nova Scotia Printing Company. 1888."

until it has expanded to a certain convenient length,—in practice, about $\frac{1}{4}$ inch beyond its correct size—and quickly passed through the zincographic press; the scraping action of the press increases the length of the transfer by a slight variable amount, which can be determined by experiment. The printer then obtains a stock of paper for printing that has been damped to such a degree of expansion as will contract on drying to the correct scale. In the paper-damping department a stock of printing paper is kept sorted in various degrees of expansion to suit the variable sizes of form on the zinc plates. Every sheet of paper used for printing is measured before being damped, after being damped, and again after being printed. Prints with $\frac{1}{100}$ or .16 per cent. of error in scale are cancelled. It is found that the elasticity of paper—*i. e.*, its capability of regaining its original form on drying after being damped—depends on its maturity, and that the maturity of a sheet depends on its age, and to a certain extent on its position in the ream.

MONT BLANC AND THE SOLAR SPECTRUM.—*Le Galilée*, for October, publishes an extract from a communication made, on the 22d of September, to the *Académie des Sciences*, by M. J. Janssen, the distinguished astronomer.

The observations recorded by M. Janssen in October, 1888, at the Grands Mulets, showed a diminution in the groups of lines in the spectrum in proportion to the elevation at which the observer stood; and this seemed to indicate that these groups would disappear at the limit of the atmosphere and that, consequently, their

appearance in the solar spectrum was not due to the action of the sun's atmosphere. To confirm or to correct these observations by others made at a greater height, M. Janssen, in August, 1890, went up to the top of Mont Blanc, and his experiments completed and confirmed those of 1888. He says : " The result of the observations made between the Eiffel tower and Meudon, those of M. de la Baume-Pluvinel at Candia, those in the laboratory, and finally, those of this year upon Mont Blanc, is that we are led to admit the absence of oxygen in the gaseous envelopes which surmount the photosphere of the sun ; or at least, of oxygen so constituted as to exercise upon light the phenomena of absorption produced in our atmosphere, and expressed in the solar spectrum by the systems of lines and bands with which we are acquainted. I consider this to be a truth finally established, from which we may draw certain conclusions with regard to the constitution of the sun's atmosphere."

M. Janssen had noticed in himself, after climbing to the Grands Mulets in 1888, symptoms of fainting that came on with the effort at mental exercise, and these symptoms were only relieved by frequent long-drawn inspirations. The ascent to the summit of the mountain in 1890, was accomplished without bodily exertion, and the freedom from sickness and uneasiness was perfect during the four-days' stay at the top. The appetite was normal, and the intellectual faculties were entire, so long as no draft was made upon the physical strength. This experience possesses value for those who are charged with the conduct of scientific observations at great altitudes.

Quatrième Congrès International de Navigation Intérieure, Manchester, 1890. La Navigation Intérieure en Espagne, par M. Andrés de Llauradó, Ingénieur en Chef du District Forestier de Madrid.

The navigable water-courses of Spain are : on the Mediterranean, the lower region of the Ebro ; on the Atlantic, those of the Tagus and the Douro, and the other important rivers that flow into the ocean ; and two canals, that of Castile, and the Imperial of Aragon.

The Canal of Castile, begun in 1753 and finished, after many interruptions, in 1849, has three branches : the Northern, 47 miles long from Alar to Serron ; the Southern, 34 miles long, from Serron to Valladolid, and the Canal de Campos, 49 miles long, from Serron to Rio Seco. This last is 38 feet wide at the surface of the water and 19 feet at the bottom, and has a depth of 9 feet 4 in.

There are 24 locks on the Northern branch, 18 on the Southern, and 7 on the Canal de Campos.

The Canal of Castile is used only for navigation, and transports annually about 20,000 tons of merchandise, a third of the amount that passed through it fifteen years ago, the railway system along the line of the canal having absorbed, with every year, a larger share of the traffic.

The Imperial Canal of Aragon, which was opened in 1790, begins at a point near the city of Tudela, and ends at Torrero, a short distance below Saragossa. From Torrero two short branches, with a total length of $7\frac{1}{2}$ miles, lead to Miraflores and El Burgo. This canal has lost all its importance as a channel of commerce since the opening (in 1860) of the railway from Saragossa to Pampeluna.

Its chief value is for purposes of irrigation, and as a source of water supply to some towns.

A company, formed in 1851, for improving the navigation of the Ebro between Saragossa and the sea, pushed its work with great energy, and without sparing expense, until 1858, when the river was opened to steam navigation as far as Escatron, 42 miles below Saragossa. The character of the river bed and the deficiency of water made it impossible to do anything beyond Escatron, and the competition with the railroad lines from Saragossa to Absasua and to Pampeluna, from Barcelona to Saragossa, and from Lerida to Tarragona, caused the withdrawal of the steam service on the Ebro, and the utilization of the waters for irrigation became the sole resource of the company.

On the Guadalete the traffic is confined to about 4,000 tons yearly of wines, staves and shooks, and cereals, the railway from Xeres to Cadiz taking the lion's share of the trade.

The supply of water in the Guadalquivir and the slope of its valley (Thalweg) are unfavorable to navigation. The maritime region, which extends from the mouth of the river to the Tabla de las Playas, a little more than half a mile above Alcalá del Rio, is divided by Mr. de Llauroadó into two sections; one, 43 miles long, from the Tabla de las Playas to the great bend of the river, and the other from the bend to the mouth, a distance of 33 miles. The influence of the tides is felt throughout the first section and the current of the river is arrested by the inflow.

In the second section, which is essentially maritime, the water is always salt. At Seville the tide rises from

5 to 8 feet, and the port, which is comprised between the Triana bridge and the Punta de los Remedios, has a depth of water of 20 feet at low tide, with a bottom of mud and sand. Four railway lines unite the port with the stations of the Cadiz and Cordova railroads. If Seville is no longer the centre of the colonial trade, its commerce is still considerable. In 1889 1,272 vessels, 494 of them steamers, with a total tonnage of 277,410, were entered and cleared at the Custom-house.

Mr. de Llauradó remarks that the creation of a maritime canal in the region of the lower Guadalquivir would furnish a sufficient depth of water for purposes of navigation and leave the fresh water of the river to be used for irrigation and the increase of production.

The river traffic of the Guadiana amounts to not more than 13,300 tons yearly; and the other two great rivers on the Atlantic side, the Tagus and the Douro, transport even a smaller quantity of merchandise. All the rivers of Spain are, in fact, torrential in character, and practically unavailable as means of communication, and it is by the railway system that the resources of the country must be developed. At a low stage of the river, the volume of water in the Tagus at Alcántara is represented by a flow of 20 cubic metres a second, but with the rapid freshets of the upper basin the river rises at the bridge of Alcántara to 36, 50, 65, and even 98 feet above low water. Equally remarkable are the freshets of the Nervion, at Bilbao, where the volume of water amounts at a low stage of the river to but 4 cubic metres a second, and increases in time of flood to 1,600 cubic metres.

A great part of Mr. de Llauradó's paper is devoted

to the commercial movement of the ports, situated on the estuaries of the Atlantic and the Biscayan coasts, and but indirectly concerned, therefore, with internal navigation. Of these there are more than 30, the most important being Huelva (near Palos, from which Columbus sailed), and Bilbao. Huelva is the emporium of the Rio Tinto copper-mines, and exports nearly 970,000 tons of ore yearly. In 1863 the total commerce of Bilbao was represented by 139,000 tons of imports, and 78,000 tons of exports; in 1888-89 (12 months) the imports and exports amounted to 4,459,972 tons, mostly exports of iron ore. The harbor of Bilbao has been deepened and improved in many ways under the direction of Mr. E. de Churruca, who is now engaged in constructing an outer harbor, which is to cover an area of more than a square mile. The work will cost \$6,000,000.

LAKE COPAIS.—The drainage of the Bæotian lake is now practically completed, the streams that flowed into it having been diverted, and the waters of the lake itself drawn off into the sea.

The area of the land reclaimed may be less than the 100,000 hectares (250,000 acres), at which it is put by the *Deutsche Rundschau für Geographie und Statistik*, XII. Jahrg., 12 Heft.; but it will make a great gain to the kingdom of Greece, and a loss to the lovers of eels.

In Darkest Africa, or the Quest, Rescue, and Retreat of Emin, Governor of Equatoria. By Henry M. Stanley. 2 vols., 8vo.

New York, 1890.

Stanley's book is like a controversial pamphlet, written in haste, and yet of intolerable length. The title seems to imply that the author regards himself as a Knight of the Round Table, but his true prototype is Pyrgopolinices, or Capt. Dugald Dalgetty. The impatience of the public to possess the book excuses much of the composition and, in a measure, some of the details ; but, even with allowance for this, the story fatigues the reader. Stanley's interest in his own performances is not to be doubted, and this interest should communicate itself to other men ; but few can resist the effect of his iteration. The charity, also, and the piety, which adorn the language, even more than the life, of Mr. Stanley, express themselves, like the notes of a street organ, in the least congenial places ; and the reader, less spiritually minded than the Father of the Congo, finds himself lost in a maze of unrelated ideas. The pen-portraits, and descriptions of character, and the conversations reported lack deliberation and purpose, and add no real element to the work.

There is too much space devoted to the camp at Yambuya, and even the terrors of the Great Central African Forest seem to be exaggerated, though, in describing these, Stanley writes with an approach to naturalness and simplicity.

The geographical discoveries of the expedition were : the Great Forest, estimated by the explorer to cover more than 300,000 square miles ; the Pygmies, the Ruwenzori mountains, and the Albert Edward lake.

It is to be regretted that Stanley was too much absorbed in his unselfish enterprise to remember that others had preceded him in the discovery of the Pygmies.

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and the Ruwensori and the Great Forest. The marches through the Forest and the naming of the Albert Edward lake are his own, and he, alone among travellers, recognizes in the Pygmies the oldest aristocracy on earth; a clear injustice to the Cranes.

Not less than three hundred pages are devoted to Emin Pasha, his position and difficulties, the discussions with him, his irresolution and his ingratitude in refusing to be rescued; but the one page telling in plain English, why Stanley went to the Albert Nyanza, is not to be found.

In Darkest Africa is a record that shows once more its author's energy, his contempt of danger, and his fitness for the command of wild men, but it does not increase respect for his character.

EXTINCTION OF THE WHITE RHINOCEROS.—Mr. Selous, who has done a great deal of travelling and exploration in South Africa, expresses himself as follows, in the London *Field* of August 16th:

“It was within a mile of this spot that, two years previously, (*i. e.*, in 1883) I shot two white rhinoceroses (*Rhinoceros simus*), the last of their kind that have been killed (and perhaps, that *ever will be killed*) by an Englishman. They were male and female, and I preserved the skin of the head and the skull of the former for the South African Museum in Cape Town, where they now are. I shall never cease to regret that I did not preserve the entire skeleton for our own splendid Museum of Natural History at South Kensington; but when I shot the animal I made sure I should get finer specimens later on in the season. However, one

thing and another prevented my visiting the one spot of the country where I knew that a few were still to be found, and now those few have almost, if not quite all, been killed; and, to the best of my belief, the great white, or square-mouthed, rhinoceros, the largest of modern terrestrial animals after the elephant, is on the very verge of extinction, and in the next year or two will become absolutely extinct. If in the near future some student of natural history should wish to know what this extinct beast really was like, he will find nothing in all the museums of Europe and America to enlighten him upon the subject but some half-dozen skulls and a goodly number of the anterior horns." Mr. Selous stands, like Sir Bedivere

This way and that dividing the swift mind,

between grief for the extinction of the rhinoceros and sympathy with the student that is to be; but let him take comfort. He, at least, will live in a kind of history as the Englishman who bagged the last pair of white rhinoceroses, and wept the while, not as a rhinoceros weeps.

THE PACIFIC ON THE EAST COAST OF JAPAN.—Admiral Geo. E. Belknap, U. S. N., read a paper in October last, before the Asiatic Society of Japan, on "The Depth of the Pacific on the East Coast of Japan, with a Comparison of Other Oceanic Depths."

The subject of oceanic depths has been treated by Professor Dana, in the *American Journal of Science*, for March, 1889, but Admiral Belknap, who commanded the *Tuscarora* expedition in 1874, gives some interesting details of his own experience.

The *Tuscarora* left Yokohama in June, 1874, to survey a cable route from a point on the east coast of Japan on a great circle running through the Aleutian chain of islands, and ending at Cape Flattery at the entrance of Puget Sound. At 100 miles from the coast a sounding was made in 3,427 fathoms, the water having deepened more than 1,800 fathoms in a run of 30 miles.

The next cast was made in the Kuro Siwo, or Black Stream, and the wire broke when 4,643 fathoms had run out, without reaching bottom. The ship was headed in shore and the great circle was taken up again in latitude 40° N. Three successive casts of the lead within 80 miles gave 3,439, 3,587 and 3,507 fathoms. The next seven soundings at intervals of 40 miles apart showed 4,340, 4,356, 4,041, 4,234, 4,120, 4,411, and 4,655 fathoms. Considering these great depths, Admiral Belknap concluded that the great circle route would have to be abandoned, and search made for a new line.

He accordingly put back to Hakodate, and, starting again on the 30th of June, skirted the Kurile Islands as far as latitude 48°, and then laid a course for Agattu, in the Aleutian group.

It was found that the water deepened rapidly on this line also, a depth of 3,754 fathoms being reached 110 miles west of Cape Lopatka. Between this point and the Aleutian Islands a ridge rises to within 1,777 fathoms of the surface, with soundings of 4,037 fathoms at the eastern base of the ridge.

This series of soundings developed, therefore, a trough of extraordinary depth and extent along the eastern coast of Japan and the Kurile Islands and

proved the Kuro Siwo "to be of greater extent than any similar or approaching depression yet found in any other region of the great oceans."

From the great mass of data now brought together on the subject of oceanic depths, Admiral Belknap ventures to formulate with singular precision the proposition that, "*as a rule, the deepest water is found, not in the central parts of the great oceans, but near, or approximately near the land, whether of continental mass or island isolation.*"

A review of the work done shows that the *Tuscarora* found the first depths of 4,000 fathoms and approaching 5,000 fathoms; that the *Challenger* discovered the great depression of considerably more than 4,000 fathoms (4,475) in the bed of the North Pacific, near Guam; that the U. S. Coast Survey steamer *Blake* developed the 4,561 fathom depth in the North Atlantic, near Porto Rico, at a locality first indicated by the *Challenger's* soundings; and that H. M. Surveyingship *Egeria* found depths of 4,428, 4,295 and 4,530 fathoms, in 1888 and 1889, in the neighborhood of the Friendly and Cook Islands, in the South Pacific.

OBITUARY.

SIR RICHARD F. BURTON.—This famous traveller died at Trieste, on the 20th of October last, in the seventieth year of his age. He was born in Hertfordshire, England, on the 19th of March, 1821, and passed his early life on the continent. At the age of nineteen, he was entered at Trinity College, Oxford, but was rusticated after no long time, and then obtained a cadetship in the Indian army. In India, where he remained